2011 Differentiated Instruction Institute:
"Just Right—Right Now"—Across the Spectrum

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Building Higher Order Thinking Skills into Content Instruction

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Survey—Building Thinkers	Indicate the degree to which you think your students meet the criteria below. **(5 = Highest; 1 = Lowest)**

To the Teacher: When you incorporate thinking skills into your teaching, you want to know if students are increasing their ability to think critically and creatively. One way to evaluate students' thinking is to observe how often they exhibit certain key behaviors. Please rate these positive-thinking behaviors.

Perseverance—Do your students...

1. Stick with it when trying to solve problems, answer questions and complete assignments?	5	4	3	2	1
2. Work the problem from a different angle, if they don't succeed?	5	4	3	2	1
3. Analyze problems following a logical sequence of steps?	5	4	3	2	1

Activation of prior knowledge—Do your students...

4. Make connections between what they already know and a new concept?	5	4	3	2	1
5. Use prior knowledge to assist in the learning task? (Say, *This topic reminds me of...?* or, *This is like the time we...?)*	5	4	3	2	1

Metacognition—Are your students able to...

6. Tell you the thinking that led them to their answers?	5	4	3	2	1
7. List the steps involved in completing a task and describe where they are in that sequence?	5	4	3	2	1
8. Indicate at what point they ran into difficulty?	5	4	3	2	1
9. Describe their thinking at the point of difficulty?	5	4	3	2	1
10. "Think aloud" as to why a choice was made or response given.	5	4	3	2	1
11. Tell the steps they took to complete the task successfully?	5	4	3	2	1
12. Support their responses by referring back to the text?	5	4	3	2	1
13. Articulate an issue or problem from numerous perspectives?	5	4	3	2	1
14. Clearly explain how they arrived at an interpretation or conclusion?	5	4	3	2	1

Reflectiveness—Do your students...

15. Think before answering?	5	4	3	2	1
16. Take time to understand instructions before beginning an assignment?	5	4	3	2	1
17. Plan their steps so erasures are kept to a minimum?	5	4	3	2	1

Problem solving—Do your students...

18. Ask questions and identify problems on their own?	5	4	3	2	1
19. Ask their peers questions like, *How do you know that's true?* and, *What do you think that?*	5	4	3	2	1
20. Search for and uses information that is clear, accurate and relevant?	5	4	3	2	1

Flexibility—Are your students...

21. Comfortable with ambiguity? (answers don't come right away)	5	4	3	2	1
22. Willing to consider alternative points of view?	5	4	3	2	1
23. Able to evaluate the consequence of different actions?	5	4	3	2	1

Precise language—Do your students...

24. Use quality descriptive words and analogies to describe objects, people and ideas?	5	4	3	2	1
25. Avoid use of slang and vague terms such as cool, good, okay.	5	4	3	2	1

Enjoyment of thinking—Do your students...

26. Welcome situations which require them to think?	5	4	3	2	1
27. Exhibit an "I can" attitude when confronted with thinking tasks?	5	4	3	2	1
28. Find answers on their own without help from you?	5	4	3	2	1

Transference

29. Students use their thinking skills both in and out of class.	5	4	3	2	1
30. Other teachers say your students use high-level thinking strategies.	5	4	3	2	1

Synthesis and Summarizing

"Somebody Wanted But So"

Somebody (Character)	wanted (Key Problem)	but (Conflict)	so (Outcome)

Example: Charlotte wanted to do something to save Wilbur's life, but she didn't know what to do so she spun words into her spider webs to make people believe he was a very special pig.

Example: Lewis and Clark wanted to discover a navigable water route from the Mississippi to the Pacific Ocean but were unsuccessful; however they traveled by foot and boat to the Pacific and a year later returned home with maps and scientific journals of their trip.

Attribute Association

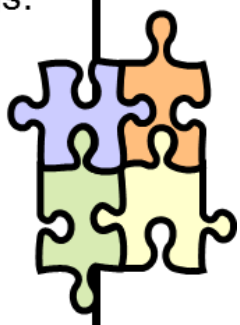
- **List 10 attributes of an item, concept, artifact, etc.**
- **Write in order for the class to see or ask students to write them down in order from 1-10.**
- **Have sets of cards numbered 1-10. You will need one set per pair. (You can also use decks of cards pulling out ace to 10).**
- **Have each student select one card randomly. They are to look at the words that correspond with their numbers and come up with commonalities between the two words.**
- **Have them put those cards aside and pull two more out. Do this several times.**
- **Note: You may use fewer attributes, but will need to adjust the number of cards.**

List words that describe the story of The Three Little Pigs.

List words or phrases that describes middle school students.

List terms or words that relate to plate tectonics.

List words that relate to the Reconstruction era after the Civil War.



Divergent Questioning Model

In an effort to encourage unique and divergent thinking and to stimulate originality, the following questioning models can be utilized in all subject areas.

Quantity Model

Pattern:
How many ways . . . . .?
List the reasons for. . . .
List all of the . . . . .

Examples:
List the Allied powers in World War II. *(World History)*
List as many non-renewable resources as you can think of. (*(Earth Science)*
List all the simple machines that are used daily in your house. (Science)

Viewpoint /Involvement Model

Pattern:
How would this look to a . . . .?
What would this look like to a . . . .?
What would _____ think about _____?
How would you feel if you were _____?
You are a _____. What does _____ look like from your point of view?

Examples:
You are the **Mississippi River**. What role have you played in settling North America? *World Geography)*
You are the **equator** on a map. Tell travelers the three countries you think they should stop and see if they were to follow you around the world. Give an economic, social and political reason why you chose the countries you did. *(World Geography)*
You are a triangle. Tell us when the Pythagorean Theorem affects you. *(Geometry)*
You are one of the authors of the Constitution, what advice would you give politicians today *(United States History and Government)*
If you were $1000.00 donated to a political campaign. Where do you go and how can you be used? *(Government)*
If you were the Periodic table and nobody thought you were important, what would you say to convince them? (Chemistry)

Forced Association Model

Pattern:
How is _____ like a _____?
How can you get ideas from _____ to help you work on _____?
How can thinking about _____ help us solve this problem?

Examples:
How is Martin Luther King, Jr. like an automobile? (History)
How is a Age of Enlightenment like an interstate highway? *(World History)*
How is Huck Finn like tractor? *(English)*
How is a cell like a refrigerator? *(Biology)*
How is writing a research paper like planting a garden? *(English)*

Reorganization Model

Pattern: What would happen if . . . . .?
Suppose _____occurred? What would be the consequences?

Examples: What would happen if there were no tectonic processes in the earth?
(Earth Science,)
What would happen if the Russians had been with the AXIS powers in World War II?
(Social Science World History)
How might Thoreau have changed if he were substantially influenced by Mark Twain ?
(English)

Suggestions for Incorporating Divergent Questioning

- ***Write out your questions before hand.*** Do this for two reasons: (1) It takes a few minutes to think through what you want the question to be based on the content you are working with; and (2) If you think you will just do it when it "feels right," it will never get done. Divergent questioning is rarely spontaneous.

- ***Don't try to use all the questioning models in the same lesson.*** Pick a model a day or insert one kind of question per lesson. (The exception here is that teachers should instruct students in the use of Divergent Questioning Models with explanation as to why the models are helpful and how they will be used in the future.)

- ***Focus on VIEWPOINT, INVOLVEMENT, FORCED ASSOCIATION AND REORGANIZATION models***. Most teachers already do a good job with the Quantity Model (brainstorming.)

- ***Allow think time before accepting responses.*** A good strategy is to use Think/Pair/Share to allow everyone to have some input before whole-group discussion.

Adapted from Roger Taylor

Teaching Smarter with the Brain in Focus: Lesson Design Reminders

- ☐ Is your classroom a safe, nurturing classroom for students absent of threats?
- ☐ Are you practicing the "age" rule in regard to how long you ask students to remain in the same state of attention when planning the lesson?
- ☐ Do you activate prior knowledge of students before teaching new concepts by building connections based on students' experiences, hooking fledgling synapses to existing neurons?
- ☐ Do you stimulate growth of synapses by consistently creating opportunities for higher-level (Bloom) and divergent thinking throughout the lesson including question/answer interactions and in assignments?
- ☐ Are you modeling what you want students to do (and in turn, activating mirror neurons) through:
  - Strong and weak examples for their critique
  - Clear criteria for the task ("look-fors")
  - Rubrics for projects and key assignments
- ☐ Do you vary activities and keep your students engaged throughout the lesson, encouraging social interaction through cooperative groups and partner learning experiences?
- ☐ Do you intersperse movement and exercise during lessons to keep oxygen in the brain, improve attention, and enhance growth of synapses?
- ☐ Do you increase retention and memory of students by using:
  - novelty in your teaching, i.e., props, costumes, unusual activities?
  - non-linguistic representations, i.e., images, pictures to enhance note-taking, vocabulary?
  - music to enhance learning environment, introduce concepts; songs, rhythms, rap to increase retention of content?
- ☐ Do you keep the Primacy/Recency "rule" in mind ensuring that:
  - the first part of class is focused with clear statements about the lesson's learning goals?
  - closure occurs at the end of the lesson highlighting the key points learned?
  - exit "tickets" are used for students to restate the key points of the lesson?
- ☐ Do you re-teach for mastery using elaboration, rather than repetition of the same strategies to get the right answer?